Remarks

The above Amendments and these Remarks are in reply to the Office Action mailed March 13, 2002. No fee is due for the addition of new claims. Reconsideration of the rejections and consideration of the newly-added claims is requested.

I. Objection to the Specification

The disclosure is objected to because it is necessary to update the status of applications included in the disclosure, such as under the "Cross Reference" section. The paragraph to which the Examiner objected has been amended to update the status of the referenced applications. Applicants therefore respectfully request that the objection to the specification be withdrawn.

II. Rejection under 35 USC 112

Claims 14 and 31 are rejected under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Claims 14 and 31 have been amended to clarify that which applicants regard as the invention, and should be sufficiently definite. Applicants therefore respectfully request that the rejection with respect to claims 14 and 31 be withdrawn.

III. Rejection under 35 USC 102

a. JP 07-130712A (*Keizo*)

Claims 12-16, 19, and 30-31 are rejected under 35 U.S.C. §102(b) as being anticipated by JP 07-130712A (*Keizo*). *Keizo* teaches a method for etching an almost-vertical sidewall in a platinum-based alloy without allowing contamination to reattach on the sidewall during a treatment step. The alloy is

on a workpiece 6 that is placed on a board 2 containing a heater 3. The heater in the board is used to control the heat of the workpiece to prevent contamination from collecting on the sidewalls (see Abstract).

Claim 12 in the present invention as amended recites "heating the electrode with said heater to a temperature such that any material resulting from the reaction deposited on the surface of the electrode forms a stable layer of material." Such a limitation is not disclosed by *Keizo*. *Keizo* does not form a layer of material on the surface of an electrode, or even on the workpiece, but instead teaches preventing material from collecting on the workpiece (See Abstract). As *Keizo* does not disclose all recited limitations, *Keizo* cannot anticipate claim 12. Claims 13-16, 19, and 30-31 depend from claim 12 and therefore cannot be anticipated by *Keizo*. Applicants therefore respectfully request that the rejection with respect to claims 12-16, 19, and 30-31 in view of *Keizo* be withdrawn.

b. *DeOrnellas*

Claims 12-16, 19, and 30-31 are rejected under 35 U.S.C. §102(e) as being anticipated by *DeOrnellas* (6,046,116). *DeOrnellas* would qualify as prior art under §102(e), and under §103(c) a reference shall not preclude patentability "where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person." The *DeOrnellas* reference and the present invention were both assigned, or subject to an obligation of assignment, to Tegal Corporation at the time the present invention was made. *DeOrnellas* therefore cannot be used as a reference anticipating claims12-16, 19, and 30-31. Applicants therefore respectfully request that the rejection with respect to claims 12-16, 19, and 30-31 in view of *DeOrnellas* be withdrawn.

IV. Double Patenting Rejection

Claims 12-16, 19, and 30-31 are rejected under the judicially-created doctrine of obviousness double-patenting as being unpatentable over claims 1-37 of *DeOrnellas*. *DeOrnellas* claims controlling the temperature of a wafer in order to minimize critical dimension growth (Claims 1, 5, 6, for example). The present invention instead heats an electrode such that "any material resulting from the reaction deposited on the surface of the electrode forms a stable layer of material." While *DeOrnellas* does claim heating the chuck (claim 3, for example), the chuck is not an electrode on which a layer of material will collect, as the wafer covers the chuck. Further, there would be no motivation to form a stable layer of material on the chuck, as it the collected material would not flake off and fall onto the wafer. Applicants therefore respectfully submit that the claims of *DeOrnellas* and the claims of the present invention are patentably distinct. Applicants therefore respectfully request that the double-patenting rejection be withdrawn.

V. Newly Added Claims

Claims 56-61 have been added to more particularly point out and distinctly claim the subject matter which Applicants regard as the invention. These claims are supported by the specification and do not add new matter to the disclosure. Applicants respectfully request that the Examiner consider the new claims.

VI. Conclusion

In light of the above, it is respectfully submitted that all of the claims now pending in the subject patent application should be allowable, and a Notice of Allowance is requested. The Examiner is respectfully requested to telephone the undersigned if he can assist in any way in expediting issuance of a patent.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

Date: 6/4/02

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APPENDIX

In the Specification:

[0001] Cross-referenced and incorporated by reference are [pending] U.S. Patent Applications entitled A METHOD FOR MINIMIZING THE CRITICAL DIMENSION GROWTH OF A FEATURE ON A SEMICONDUCTOR WAFER filed on November 19, 1997, and with Serial No.08/974,089, issued April 4, 2000 as United States Patent No. 6,046,116; and [pending] U.S. Patent Application entitled PLASMA REACTOR WITH A DEPOSITION SHIELD, filed on December 5, 1997, and with Serial No. 08/985,730, now abandoned; and [pending] U.S. Patent Application entitled PLASMA REACTOR WITH A DEPOSITION SHIELD filed on December 1, 1998, and with Serial No. 09/204,020, issued December 28, 1999 as United States Patent No. 6,006,694.

In the Claims:

12. (Once Amended) A method of operating a reactor which comprises a reactor chamber, an electrode, a heater that heats said electrode, and gas inlets and outlets, the method comprising:

introducing process gas into said reactor chamber;

providing power to said electrode in order to facilitate a reaction with said process gas and a workpiece contained in said reactor chamber; and

heating the electrode with said heater to a temperature such that any material resulting from the reaction deposited on the surface of the electrode forms [which encourages the growth of] a stable layer of material [on said electrode].

14. (Once Amended) The method of claim 12 wherein said heating step includes:

heating the electrode to a temperature between about 300°C and [to] about 500°C.

31. (Once Amended) The method [reactor] of claim 12 including the step of etching one of the group consisting of titanium (Ti), titanium nitride (TiN), platinum (Pt), iridium (Ir), iridium oxide

(IrO_2), barium strontium titanate (BST), strontium bismuth tantalate (SBT), strontium titanate (STO), ruthenium (Ru), ruthenium oxide (RuO_2), and lead zirconium titanate (PZT).

56. (New) The method of claim 12, wherein the step of providing power provides power to an upper electrode.

57. (New) A method of operating a reactor which comprises a reactor chamber, an upper electrode, and a heater that heats the upper electrode, the method comprising:

introducing process gas into said reactor chamber;

providing power to said upper electrode in order to facilitate a reaction with said process gas and a workpiece contained in said reactor chamber; and

heating the upper electrode with said heater to a temperature such that any material resulting from the reaction that is deposited on the surface of the upper electrode forms a stable layer of material.

58. (New) A method for etching a workpiece in a reactor chamber, comprising:

etching a workpiece in the reactor chamber; and

heating a surface in the reactor chamber during the etch such that etch materials deposited on the surface form a stable layer of material that does not flake off onto the workpiece.

59. (New) A method according to claim 58, wherein the step of heating a surface includes heating a surface selected from upper electrodes, side electrodes, deposition shields, and chamber surfaces.

60. (New) A method according to claim 58, wherein the step of heating a surface includes heating the surface until any gas collected on the surface de-absorbs from the surface.

61. (New) A method according to claim 58, wherein the step of heating a surface includes heating the surface until any gas collected on the surface boils off the surface.